




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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,523	02/12/2004	Jan-Tian Lian	0941-0914P	4115
2292	7590	12/17/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			MACK, RICKY LEVERN	
			ART UNIT	PAPER NUMBER
			2873	

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/776,523	Applicant(s) LIAN ET AL.	
	Examiner Ricky L Mack	Art Unit 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,8-15,17-20 and 22-26 is/are rejected.
- 7) ☒ Claim(s) 3,7,16,21 and 27 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0204</u> . | 6) <input checked="" type="checkbox"/> Other: <u>Detailed Action</u> . |

DETAILED ACTION

Claim Objections

1. Claims 5, 6, 19 and 20 are objected to because of the following informalities: Claims 5 and 6 recite the same limitations as respective claims 19 and 20; and in claims 7, 21 and 27, the meaning of each letter used in the equations should be identified in the claims. Claims 5 and 19 depend from claim 1 and claims 6 and 20 respectively depend from claims 5 and 19.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1, 4-6, 8-13, 15, 17-20 and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (6217173) in view of Sawai et al. (6155685).

Huang discloses (see col. 3, line 25 through col. 4, line 15, figs. 5-7), as in claims 1, 8-12 and 22-26, an optical polarizing module, comprising: a polarizing beam splitter (94), reflecting light with a first polarization (s), defining a first beam, and passing light with a second polarization (p); a mirror (94b, *surface reflecting p*), disposed near the polarizing beam splitter with a predetermined acute angle to reflect light with the second polarization, passing through the polarizing beam splitter again and forming a second beam; a first lens array (96), having a plurality of first lens cells facing the polarizing beam splitter and disposed near the polarizing beam splitter to couple the first beam and the second beam; and a second lens array (100) with a

first surface facing the first lens array and a plurality of second lens cells on the opposite side, wherein the second lens array is disposed parallel to the first lens array at a first distance, a plurality of elongated half-wave plates (49) disposed adjacent to the first surface to convert the direction of the first polarization of light in the second beam directed from the first lens array into the direction of the second polarization. Huang discloses the claimed invention except for the half-wave plates disposed on the first surface of the second lens array. In the same field of endeavor, Sawai discloses a half-wave plate disposed on a surface of second lens array. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the optical device of Huang with a half-wave plate disposed on the surface of a second lens array, as disclosed by Sawai for the purpose of maintaining the proximity of the half-wave plate to the second lens array and for providing a mount for the half-wave plate. Furthermore, the limitation is considered to be providing in an integral manner a feature which the prior art discloses as piecemeal, and therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the half-wave plate and the second lens array integral, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

In further regard to claim 12, Huang does not disclose details of a display module. Sawai discloses a liquid crystal optical module (see Fig. 1; refs. B, C & D). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide projector of Huang with the display module of Sawai for the purpose of providing a display module for the light traveling through Huang's projector. And consequently, the distance between the liquid

crystal module and between the second lens array would inherently be at a second distance, as in claim 26.

Huang discloses, as in claim 13, a concave reflector (92) which would be a convergent light source.

Huang discloses, as in claim 15, an incident angle between the incident light and the polarizing beam splitter (94) being between 35 and 55 degrees (see figure 6).

Huang discloses, as in claims 4 and 17, the first and second lens array have the same aspect ratio (col. 4, lines 23-26).

Huang discloses, as in claim 18, the first surface (not numbered) of the second lens array (100) faces the first lens (96) array (see figure 6).

Huang discloses (see figure 6), as in claims 5 and 19, that the first and second lens arrays are parallel to an intersection of the extending planes of the polarizing beamsplitter (surface reflecting S) and mirror (surface reflecting P) and likewise would an elongated axis of each half-wave plate be parallel to said intersection, as in claims 6 and 20.

4. Claims 2 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (6217173) in view of Sawai et al. (6155685) as applied to claims 1 and 12 above, and further in view of Shimizu et al. (6511183).

Huang in view of Sawai disclose the claimed invention except for the use of a wire-grid polarizing beamsplitter, as in claims 2 and 14. Within the same field of endeavor, Shimizu discloses a wire-grid polarizing beamsplitter. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the optical device taught by Huang in view of Sawai with the wire-grid polarizing beamsplitter disclosed by Shimizu for the purpose of

the spacing of the wires of the grid is generally less than the wavelength of the shortest wavelength of the visible light used in a projector, roughly 290 nm (col. 12, lines 48-52).

Allowable Subject Matter

5. Claims 3, 7, 16, 21 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is an examiner's statement of reasons for allowability: The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claim(s), in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in claim(s) 3, 7, 16, 21 and 27, wherein the claimed invention comprises first and second lens arrays having F-numbers between $f/1.5$ and $f/3$; a relationship between the first distance and the predetermined angle for which the mirror is disposed being $\Theta = d_2/2t$ (t represents the first distance); a relationship between the length of a plurality of first lens cells (d_1) and the length (l) of the plurality of second cells (d_2) is: $(d_1/d_2) = 1(l + t)$, as claimed. The combination of all the claimed features are not anticipated or made obvious by the prior art and all of said features are relied upon for a determination of allowability.

Conclusion


7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are cited for disclosing an optical polarizing device having a first and second lens array, a half or quarter wave plate, and a polarizing beamsplitter: Tani et

al. (5967635), Iwamura et al. (6186629), Sawai et al. (6331879), Shibatani et al. (6332684), Huang (6796654), Yamamoto (20040001186), Koide (20040174595), Hayashi (20040218505).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ricky L Mack whose telephone number is (571) 272-2333. The examiner can normally be reached on Monday-Friday (6:30 AM to 4:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Ricky L Mack
Primary Examiner
Art Unit 2873

RM
December 13, 2004